Audiobahn®
QUALITY, RELIABILITY,& PURE BLISS
IMMORTAL SERIES SUBWOOFERS
AWIS10P / AWIS12P / AWIS15P
OPERATING INSTRUCTIONS
PLEASE READ THIS MANUAL BEFORE OPERATING UNIT. RETAIN FOR FUTURE REFERENCE.

The Audiobahn Way

To bring the product to market that excites the consumer through sound and vision from an orientation of integrity and customer service. We make you look as good as you sound. We strive to take car audio to an extreme the world has never seen, and a world that never stops evolving.

Audiobahn was established in 1997 with one long-term goal in mind, "**Build it Bigger, Badder, & Better, and the people will take notice!"** We back this statement with an engineering team that has brought home several Innovations, Design & Engineering Showcase Awards, and a marketing team from around the world that spends countless hours developing our no compromise products to satisfy the most discriminating enthusiasts.

Our global manufacturing facilities feature ISO9002 ratings (the highest level of quality control awarded in the electronics manufacturing industry), fully robotic assembly lines and a state of the art, California based R & D laboratory.

Due to overwhelming response from our competitors, and our goal to participate in even more events this year, we created *"TEAM AUDIOBAHN." This organization is designed to create a support network along with shirts and perks for team members. "TEAM AUDIOBAHN" is not only for the diehard competitor, but also for anyone that loves car audio as much as we do. With four levels of play, one is right for you to get started in the Audiobahn family.

Our Technical Department and entire staff look to strive above and beyond the rest of the pack by going that extra mile to help you out. Whether you happen to be a veteran competitor, or a beginner car audio enthusiast that does not know a voice coil from a spider. We are all here to help you get the best system you can with what you have.

Judge for yourself, and remember what it's all about, **"If it's not Bigger, Badder & Better, it's not Audiobahn."** If audio is your life, Audiobahn is the brand for you! We make you look as good as you sound. People never stop trying to get the best product, so we will never stop making it.

*To learn more about "TEAM AUDIOBAHN" please give us a call, see our website at www.audiobahninc.com, or email us at team@audiobahninc.com to learn about all the details.

Table of Contents

INTRODUCTION 3

WOOFER INTRODUCTION 4

WOOFER FEATURES 5-6

THIELE / SMALL PARAMETERS 7

BOX PARAMETERS 8

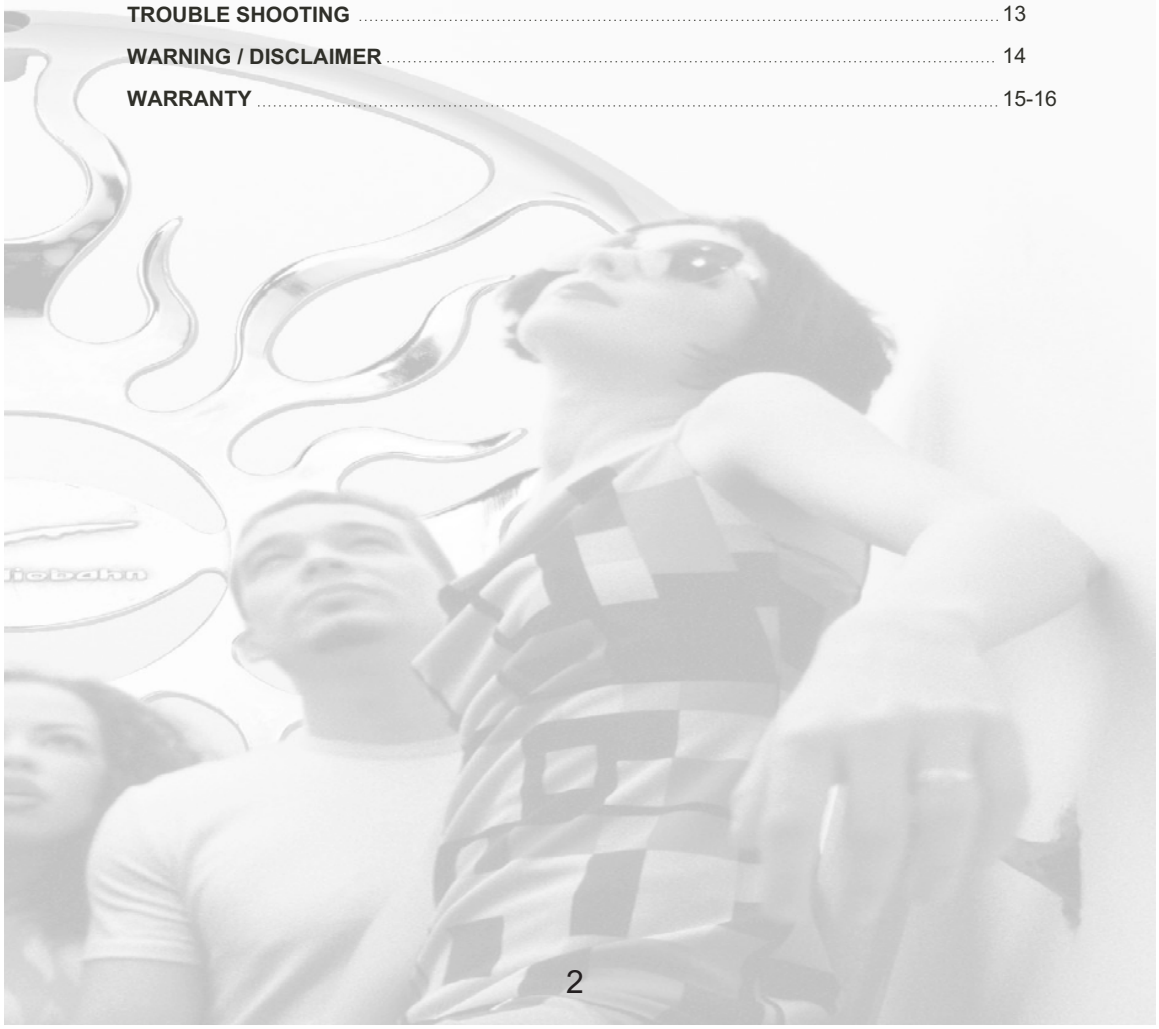
GRAPHICAL RESPONSE CURVES 9-11

ENCLOSURES AND SETUP 12

TROUBLE SHOOTING 13

WARNING / DISCLAIMER 14

WARRANTY 15-16



Introduction

Dear Customer,

Congratulations on your purchase of the worlds finest brand of car audio products. Here at Audiobahn Inc. we are devoted to making our musical reproduction the very best, and we are pleased you have chosen our product. Through years of engineering expertise, hand craftsmanship, and critical testing procedures, we have created a wide range of products that reproduce music with all the clarity and richness you deserve.

For maximum performance we recommend you have your Audiobahn product installed by an Authorized Audiobahn Dealer, as we provide specialized training through our Audiobahn Installer Training Programs. Please read your warranty, keep your receipt, and original carton for possible future use.

Great products and proper installation are only a small piece of the puzzle when it comes to your system. Make sure that your installer is using only 100% authentic installation accessories from the Audiobahn Connections. The Audiobahn Connections line has everything ranging from the smallest terminal, to power wires up to 0 gauge, and 4 channel RCA cables.

To get a free brochure on Audiobahn products and Audiobahn Connections in the U.S. call (714) 988-0400 or e-mail us at sales@audiobahninc.com.

WARNING

Continuous exposure to sound pressure levels over 100 dB may cause permanent hearing loss. High powered autosound systems may produce sound pressure levels well over 135dB. Need we say more! Use common sense.

If after reading this manual, you still have questions regarding your product, we recommend that you see your nearest Audiobahn Dealer. A list of Authorized Audiobahn Dealers can be found on our web page. If you need further assistance, feel free to call us at (800)488-8595 and ask for the Technical Department. Be sure to have the model number, date of purchase, and invoice number available when you call.

The model number can be located on the outside of the carton. Record this in the space provided below along with the date of purchase. It is a good idea to keep your receipt with this, as you will need it in the case of a warranty repair or exchange.

Model Number:_____ Date of Purchase: _____

Woofer Introduction

Audiobahn woofers are a low frequency driver designed primarily for use in small sealed or vented enclosures depending on the model of sub. Please check the specifications in this manual, our website at www.audiobahninc.com , or call us at 714-988-0400 or 800-488-8595. As specifications and parameters are subject to change, we highly advise always checking our web site or calling us for the most current information. By utilizing the latest materials and construction design and techniques, we are able to offer a subwoofer with optimized low frequency response.

Woofer Content

Audiobahn Quad 2 Ohm Voice Coil Sub
Audiobahn Sticker
Installation & Owner's Manual
Wipe Towel
Registration and Warranty Card

Technical Design Features

Cast Basket

The quad voice coil woofers use a polished chrome aluminum cast basket. This ensures a perfect alignment on each and every woofer. Unlike stamped baskets the cast basket can not bend or tweak under normal play and wear. Rigidity is important when trying to achieve high SPL and loud bass response.

Concave Aluminum Dust Cap

The cone is made with 2-layers of High-Tech Carbon Fiber braided material. This provides the best combination of weight and strength, which allows for extremely high levels of output without cone failure. The convex shape of the cone provides increased rigidity and lowers distortion.

3" Black Aluminum Former

The voice coil former is black anodized aluminum for highly efficient thermal transfer. This allows winding high temperature copper wire in multiple layers for improved efficiency. This provides the sub with improved power handling by efficiently dissipating heat.

Extended Pole Piece

The pole piece has been extended to provide a more linear magnetic field for the operation of the woofer. This lowers distortion and provides the woofer with better low frequency response.

Vented Oversized Back Plate

The back plate has been stepped deeper to allow the woofer more excursion without bottoming out. Additionally, the back plate is vented with a radius aerodynamic back vent which efficiently and quickly circulates cool air around the voice coil. This allows for more excursion and higher power handling without damaging the sub.

Voice Coil

The 4-layer, edge wound voice coil design of the speaker allows for a variety of impedance loads to be configured when used individually or matched with multiple subs. Please continue to the TECH TIPS section of this manual for wiring diagrams and procedures. The Immortal Series subs come in quad 2 ohm coil configurations.

Tall Treated Foam Surround

The tall treated foam surround is resilient to temperature variations and provides the consistent support necessary for the linear motion of the speaker cone. In addition, the inherent damping capabilities eliminates the transmission of sonic disturbances between the cone and the frame of the speaker. This greatly improves the clarity of the speakers frequency response. The narrow surround also allows for greater surface area of the cone, thus increase efficiency for SPL.

Flat Spider

The speakers linear compliance is balanced through the use of a flat spider design. A flat spider provides symmetrical control of the voice coil through it's cone excursion. Linear cone excursion reduces harmonic distortion for improved sound quality. This allows for reduced mechanical distortion for better sound quality.

Chrome Finish

Chrome has long been an industry standard in terms of durability in protective metal finishes. We have spared no expense in this area, and not only is it a protective finish, but it is also a great addition to any plexi style enclosure.

Convex Dust Cap

The use of a convex dust cap is used to increase the cone rigidity and improve power handling by forcing more air through the voice coil. Added benefits include smooth frequency response.

Audiobahn Woofer Parameters

Model #	AWIS10P	AWIS12P	AWIS15P		
Vas does not represent the volume of a Box. Vas is just a parameter used when calculating a box.					
Fs	58 Hz	50.75 Hz	45Hz		
Qts	0.475	0.461	0.493		
Qes	0.51	0.49	0.53		
Qms	7.59	9.05	7.21		
Vas (Liters)	7.48 Liters	20.46 Liters	47 Liters		
Vas (Cu. Ft.)	0.26 Cu. Ft.	0.72 Cu. Ft.	1.66 Cu. Ft.		
Re	1.3 ohms	1.3 ohms	1.3 ohms		
Le	2.09 mH	2.17 mH	2.41 mH		
Mmd	113.55 Grams	165.64 grams	172.66 grams		
Xmax	+/-12.5mm	+/-14.5mm	+/-16.5 mm		
RMS	1500 watts	2000 watts	2250 watts		
Sd	0.032 M2	0.049 M2	0.088 M2		
Freq. Resp.	28Hz - 700Hz	23Hz - 700Hz	20Hz - 700Hz		
Efficiency	93 dB	95 dB	97 dB		
An EBP of less then 45 is SUGGESTED for only a sealed box and greater then 65 for a ported box.					
EBP	114	104	85		

Dimensions

Depth	8 1/4"	8 5/8"	9 5/8"		
Hole	8 7/8"	10 7/8"	13 3/4"		
Displacement	0.25	0.4	0.7		

Audiobahn Box Specifications

All ports listed are circle ports unless otherwise stated. Surface area of a circle port = (3.14) X (radius) (squared)

Remember to build your box to the total volume, not just air space, as total volume includes all displacement.

Space Saver Bass Design

Model #	AWIS10P	AWIS12P	AWIS15P		
Ported					
Air Space (Cu. Ft.)	1.1	1.45	1.9		
Port Size (Inches)	3 x 8.5	4 x 11.75	4 x 10		
Port Vel. (%)	20.8	16.73	15.96		
-3dB (Hz)	35.39	34.69	37		
Tune Freq. (Hz)	40	40	37		
Sub Disp. (Cu. Ft.)	0.25	0.4	0.7		
Port Disp.(Cu. Ft.)	0.041	0.097	0.083		
Total Vol. (Cu. Ft.)	1.5	2	2.5		

Everyday Bass Performer

Ported					
Air Space (Cu. Ft.)	2.1	2.3	2.7		
Port Size (Inches)	4 x 9.75	(2) 4 x 15	(2) 4 x 15		
Port Vel. (%)	13.98	11.81	10.19		
-3dB (Hz)	32.1	33.81	32.31		
Tune Freq. (Hz)	36	40	37		
Sub Disp. (Cu. Ft.)	0.25	0.4	0.7		
Port Disp.(Cu. Ft.)	0.079	0.25	0.25		
Total Vol. (Cu. Ft.)	2.5	3	3.5		

Ultimate SPL Bass Box (Not Designed for Competition)

Ported					
Air Space (Cu. Ft.)	2.9	3.4	3.75		
Port Size (Inches)	(2) 4 x 15.75	(2) 4 x 10	(2) 4 x 11.25		
Port Vel. (%)	7.48	15.18	12.72		
-3dB (Hz)	31.31	32.27	35		
Tune Freq. (Hz)	35	38	29.84		
Sub Disp. (Cu. Ft.)	0.25	0.4	0.7		
Port Disp.(Cu. Ft.)	0.26	0.167	0.184		
Total Vol. (Cu. Ft.)	3.5	4	4.5		

A port velocity of 20% or under is good for everday use and 5% or under for SPL competition . Port velocity translates to port noise, so the lower the number, the less port noise you will incur.

An EBP of less then 45 is SUGGESTED for only a sealed box and greater then 65 for a ported box.

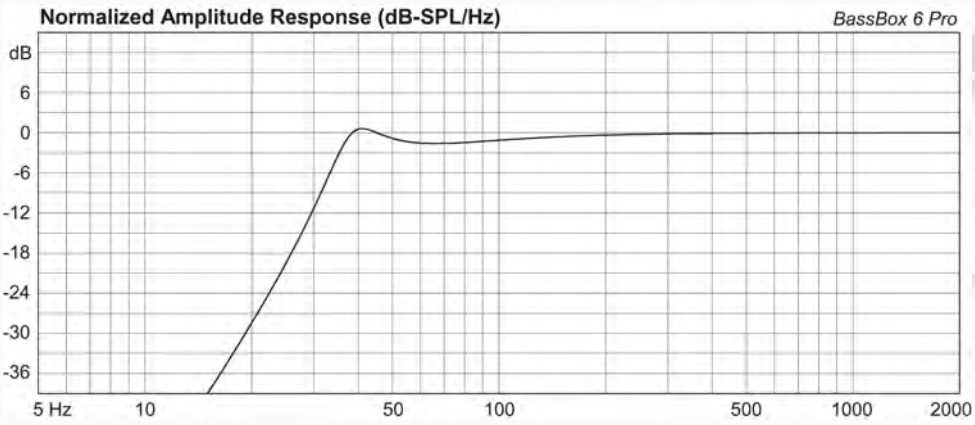
EBP	114	104	85		

The larger a sealed box is, the lower the sub will play, but the less power it will handle. The smaller a sealed box is, the higher the frequency the sub will play, and the more power it will handle.

Model #	AWIS10P	AWIS12P	AWIS15P		
Sealed	NR	NR	NR		
Minimum (Cu. Ft.)					
Maximum (Cu. Ft.)					
SPL (dB)					

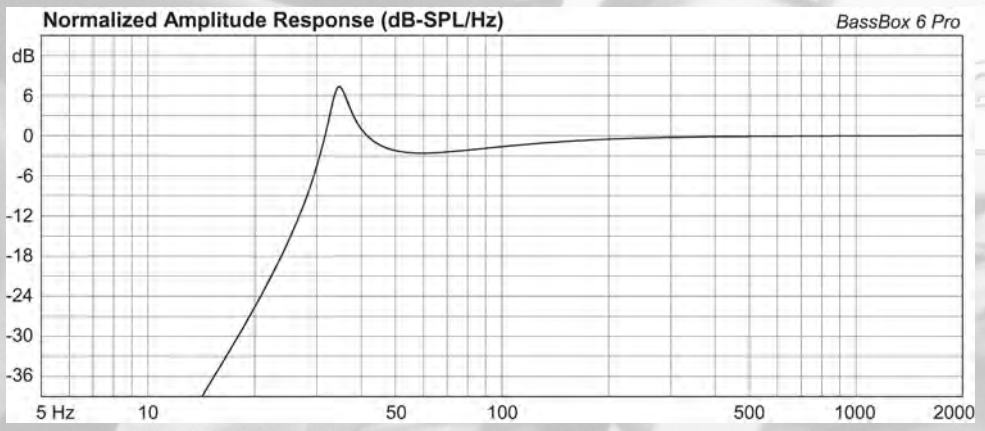
All sealed boxes already include the displacement for the subwoofer. NR = (Not Recommended)

Space Saver



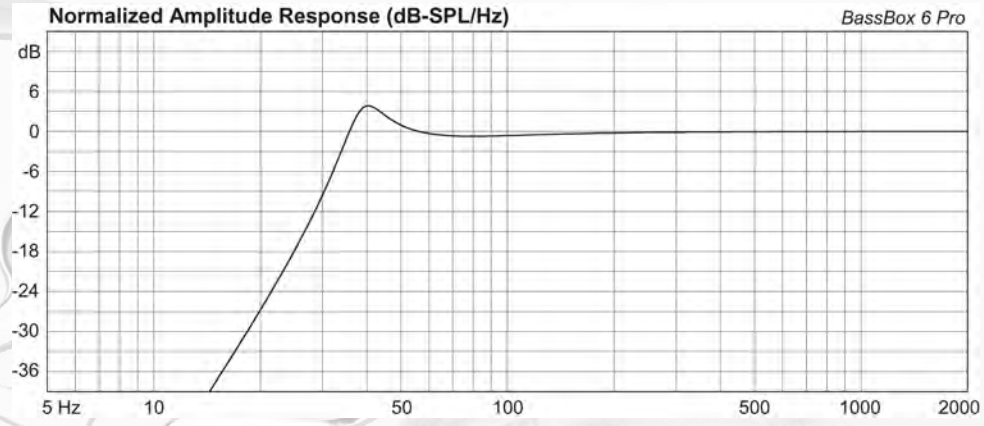
Everyday

Ultimate



Space Saver

Everyday



Ultimate

Space Saver

Everyday

Ultimate

Building an Enclosure

To work properly, the walls of the enclosure must be rigid and not flex when subjected to high pressure generated by the speaker's operation. For optimum performance, we recommend using 3/4" MDF (Medium Density Fiberboard) and internal bracing. The enclosure should be glued together along with support of screws or nails. Because MDF is porous, it is suggested that you seal the outside with polyurethane prior to painting or carpeting.

Calculating Volume

Calculating is merely a matter of measuring the dimensions in inches, and using the following formula:

Box Volume = (Height) x (Width) x (Depth) divided by 1728. This will give you the volume of the box in cubic feet.

If two facing sides are uneven length, add them together, and divide by 2 to take the average. Using this number will give you the volume without the necessity of calculating the box in sections, and adding the sections together. The thickness of the baffle material reduces the internal volume so this must be subtracted from the outside dimensions to determine the internal volume. The amount of air displaced by each model is listed on the specifications sheet in this manual and should also be subtracted from the gross volume calculation. All box parameters include displacement for ports and subs. These specs do not include the volume of the material used to build the box, so this must still be factored into the calculation.

Subwoofer Crossover

There are two operational types of crossovers, passive and active. Passive crossovers (coils and conductors) are placed on the speaker leads between the amplifier and the speaker. An active crossover is an electronic filter which separates the audio signal fed to different amplifiers. For optimum subwoofer performance, we recommend using an active 80-100Hz low pass crossover at 12dB/octive.

Troubleshooting

If you start having problems with distorted sound or loss performance after installing your subs, you can follow the instructions below to try and locate what is causing the problem.

1) If you have any distorted sound, loss of performance, or rattling from your subs, check the connections running from your amplifier or other processor to the box. You will also want to check the connections inside the box to make sure no wires have become unhooked or are loose.

2) If the above does not solve the problem, check your enclosure thoroughly to see if there are any leaks, cracks, or broken pieces. Any loss of structural integrity of your enclosure can cause significant performance loss and distortion.

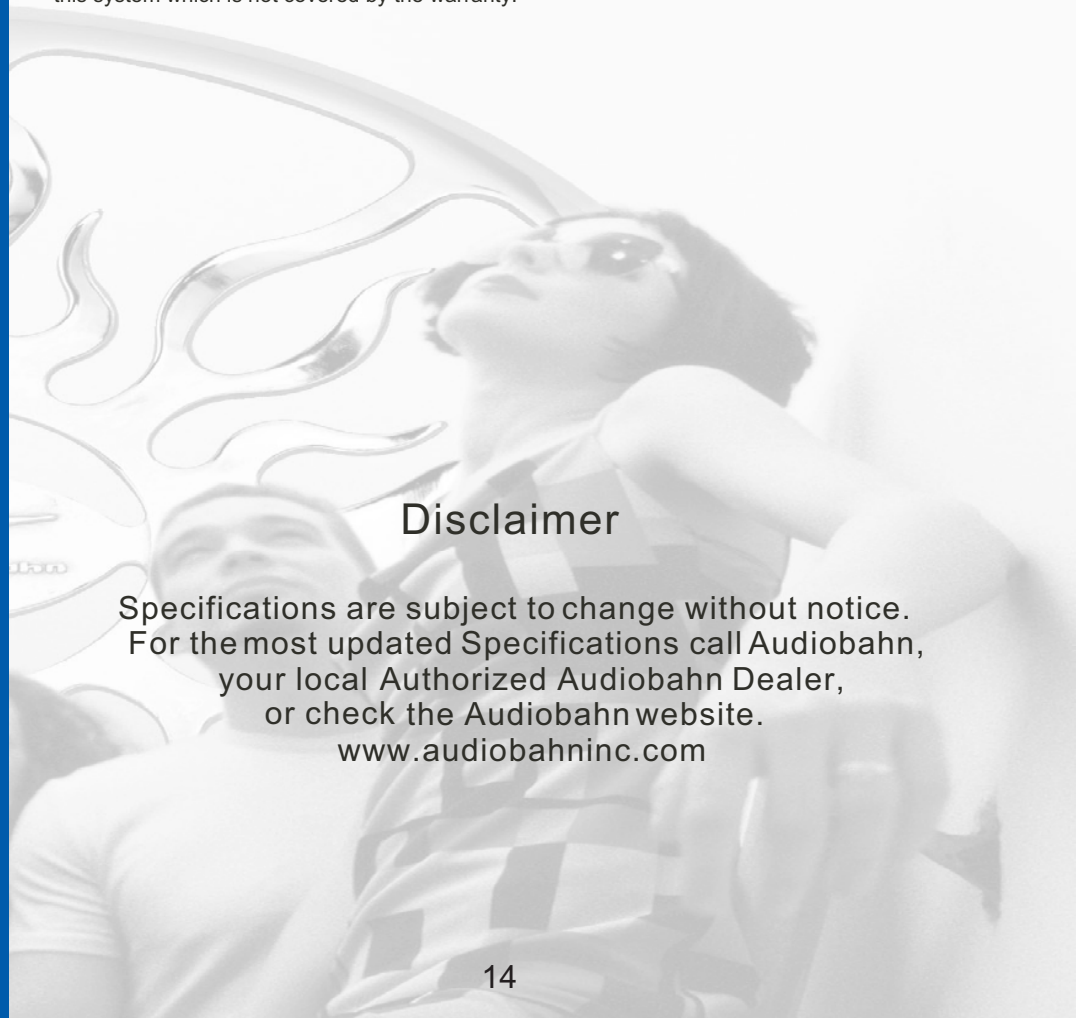
3) The next step you can take is to remove the subs and look for any burned wire leads or separated components. You can normally smell something burning when a sub blows or is going bad. Sometimes when you play subs to hard for too long, they will start to heat up.

4) If none of the above steps solve the problem, you will want to start looking at the other components in the vehicle. Start by checking all connections to and from the box, amplifier, source unit, or any other processors you may be using. You will need to reference to that particular manufacturer for any setting configurations or troubleshooting.

WARNING

Investigate the layout of your automobile thoroughly before drilling or cutting any holes. Take care when you work near the gas tanks, gas lines, hydraulic lines, and electrical wiring. Attach the system securely to the automobile to prevent damage, particularly in the event of an accident. Do not mount the system so that the wire connections are unprotected or are subject to pinching or damage from nearby objects.

The +12V DC power wire must be fused at the battery positive terminal connection. Before making or breaking power connections at the system power terminals, disconnect the +12V wire at the battery end. Confirm your radio/head unit and/or other equipment is turned off while connecting the input jacks and speaker terminals. If you need to replace the power fuse, replace it only with a fuse identical to that supplied with the system. Using a fuse of different type or rating may result in damage to this system which is not covered by the warranty.



Disclaimer

Specifications are subject to change without notice.
For the most updated Specifications call Audiobahn,
your local Authorized Audiobahn Dealer,
or check the Audiobahn website.
www.audiobahninc.com

Audiobahn Consumer Product Warranty Policy

Audiobahn products are manufactured with the highest quality components and some of the most advanced technology available. Because of this, we recommend that you have your new products installed by an **Authorized Audiobahn Dealer**.**(A list of Authorized Audiobahn Dealers can be found on our web page).**

Warranty Period: One year from the original date of purchase.

Warranty Coverage: This warranty covers manufacturer defects only. The warranty is applicable to the original purchaser, and is non-transferable. You must have a receipt from an **Authorized Audiobahn Dealer** that shows the location of purchase, price paid, and date of purchase.

(Products purchased by consumers from an **Authorized Audiobahn Dealer** outside the United States, are covered only by that countries Distributor and not by **Audiobahn**).

Notes:
Complete subwoofer enclosures (**Audiobahn** will replace defective subwoofers, plexiglass, or neon only. Do not send the entire enclosure, unless the enclosure is defective itself. You must receive prior authorization and an RA# before sending in any complete enclosure).

Audiobahn will only replace L.E.D.(s) found to be defective at the time of purchase.

Audiobahn warranties do not cover the following:

- Any product not purchased from an **Authorized Audiobahn Dealer** (including Internet dealers)
- Damage caused by abuse, misuse, accident, water / flood, or theft (including any cosmetic damage to the body of the product)
- Damage caused by improper installation
- Any cost or expense related to removal or reinstallation
- Any unauthorized services
- Any product that has the serial number removed, altered, or defaced
- Subsequent damage to any other components
- Pinched, cut, or stripped wires
- Any product that is new, and/or found to be in working condition
- L.E.D. indicators on electronics

How to receive warranty service: Contact your local **Authorized Audiobahn Dealer**, or call **Audiobahn** at **(800) 488-8595** between the hours of 9:00 AM and 5:00 PM PST.

If you are having problems with your system, we recommend you check the product carefully and thoroughly to confirm that the product truly has a manufacturer defect; as opposed to abuse, or other components in the system causing the failure. This might include having an **Authorized Audiobahn Dealer** look at the product to confirm the source of the problem. Any product found to have a manufacturer defect will be replaced with a new piece of the same or similar model, or repaired at the discretion of **Audiobahn**. Any product found to have no manufacturer defect will be returned to the sender at their cost.

You must acquire a Return Authorization Number (RA#) prior to returning ANY product to Audiobahn. That Return Authorization Number (RA#) must be prominently and clearly marked on the outside of the shipping carton, or product delivery will be refused (no exceptions will be made).

Please note: All shipping and handling (to and from) charges will be the sole responsibility of the consumer.

Please record and keep your Return Authorization Number (RA#) in the event that further communication is required.

Return Authorization Number (RA#): _____

Date product was sent: _____

Contact Information

Audiobahn Headquarters
114 South Berry St.
Brea, CA 92821
Phone (800)488-8595 Fax. (714)988-0433
Pacific Coast Time : 9am-5pm Mon. - Fri.
tech@audiobahninc.com